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Receipt

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PATENT

Attorney's Matter No. 60102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Geoffrey B. Rhoads

Application No.: 09/496,380

Filed: February 2, 2000

For: SYSTEM FOR DETECTING EMBEDDED DATA IN AUDIO NOTWITHSTANDING VARIATION IN PLAYBACK SPEED

Examiner:

Date: June 13, 2000

Examining Group 2739

CERTIFICATE OF MAILING

I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being deposited with the United States Postal Service on June 13, 2000, as First Class Mail in an envelope addressed to: OFFICE OF INITIAL PATENT EXAMINATION, CUSTOMER SERVICE CENTER, ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON D.C. 20231.

William Y. Conwell
Attorney for Applicant

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Under Continuing Data Section, please **remove**:

"which is a CIP of 08/215,289 3/17/1994 ABN

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None of the above continuing data was request in any of the filed documents and is not desired. Enclosed are the following: copies of the incorrect filing receipt with the changes noted thereon, first page of the patent application, and copy of the Combined Declaration and Power of Attorney, all supporting the requested changes.

Respectfully submitted,

DIGIMARC CORPORATION

Date: June 13, 2000

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CORRECTED FILING RECEIPT

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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/496,380	02/02/2000	2739	690	60102	21	11	1

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Date Mailed: 06/07/2000

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the PTO processes the reply to the Notice, the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Geoffrey B. Rhoads, West Linn, OR ;

Continuing Data as Claimed by Applicant

THIS APPLICATION IS A DIV OF 08/951,858 10/16/1997 PAT 6,026,193
WHICH IS A CON OF 08/436,134 05/08/1995 PAT 5,748,763
WHICH IS A CIP OF 08/327,426 10/21/1994 PAT 5,768,426
WHICH IS A CIP OF 08/215,289 03/17/1994 ABN
WHICH IS A CIP OF 08/154,866 11/18/1993 ABN

Foreign Applications

If Required, Foreign Filing License Granted 03/31/2000

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Title

System for detecting embedded data in audio notwithstanding variation in playback speed

Preliminary Class

370

Data entry by : JOHNSON, TRACEY **Team :** OIPE **Date:** 06/07/2000

SYSTEM FOR DETECTING EMBEDDED DATA IN AUDIO NOTWITHSTANDING VARIATION IN PLAYBACK SPEED

Related Application Data

This application is a division of copending application 08/951,858, filed October 16, 1997, which is a continuation of 08/436,134, filed May 8, 1995, now US Patent 5,748,763, which is a continuation-in-part of application 08/327,426, filed October 21, 1994, now US Patent 5,768,426. These applications are incorporated herein by reference.

Field of the Invention

The present invention relates to audio signal processing, and more particularly relates to a system for detecting embedded data from an audio signal notwithstanding pitch variations in the audio signal.

Background and Summary of the Invention:

In detecting embedded signals from audio, a problem arises if the audio playback speed is altered, changing the pitch of the audio signal. A pitch change in the audio signal is manifested as a frequency shift of any data signal embedded therein. If the embedded signaling relies on known frequency characteristics to effect decoding, pitch variation in the audio can prevent the embedded data signal from being decoded successfully.

In accordance with one aspect of the present invention, this problem is solved by providing plural decoders, operating in parallel on the encoded audio signal, each designed to detect the embedded signal at a different audio playback speed. For example, one detector can be arranged to detect the encoded signal if playback speed is 0.5% slow, another if playback speed is correct, etc. By such an arrangement, detection reliability is enhanced, without introducing undue delay in the detection process.

(A similar arrangement is taught in WO 97/33392, but that application has a priority date more than a year after the priority date of the present application.)

The foregoing and additional features and advantages of the present invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings – especially Figs. 9-12.

Brief Description of the Drawings

Fig. 1 is a simple and classic depiction of a one dimensional digital signal which is discretized in both axes.

Fig. 2 is a general overview, with detailed description of steps, of the process of embedding an "imperceptible" identification signal onto another signal.

Fig. 3 is a step-wise description of how a suspected copy of an original is identified.